

I claim:

1. A linear electric motor for transportation of at least one vehicle along a road, of the type having motor parts which are both vehicle parts of said motor mounted on each said vehicle, and road parts of said motor mounted along said road, comprising:

5 A set of powerable electric coils, said set being selected from the group consisting of all of said vehicle parts, all of said road parts, and all of said motor parts;

Said vehicle parts, road parts and road having a configuration such that motion of said vehicle along said road sequentially
10 brings each of said vehicle parts into close proximity with successive ones of said road parts;

A spacing arrangement means, for spacing of said motor parts, to achieve the function of minimizing the number of road parts required per mile of said road; and

15 A source of pulsating electric current, connected by synchronized switching means to power any pair of motor parts, a said pair of motor parts being one vehicle part and one road part, only while any said pair of motor parts are in position to generate an electromagnetic force upon said vehicle in a desired direction,
20 where said desired direction is the forward direction for acceleration or reverse direction for braking.

2. Linear electric motor of claim 1, wherein said road parts are powerable electric coils and said vehicle parts are plates composed of nonferrous metal.

25 3. Linear electric motor of claim 1, wherein said road

parts are powerable electric coils and said vehicle parts are superconducting magnets.

4. Linear electric motor of claim 1, wherein said road parts are powerable electric coils and vehicle parts are shorted coils.

5. Linear electric motor of claim 1, wherein all of said motor parts are powerable electric coils.

6. Linear electric motor of claim 1, wherein said vehicle parts are powerable electric coils and said road parts are plates composed of nonferrous metal.

7. Linear electric motor of claim 1, wherein said vehicle parts are powerable electric coils and said road parts are shorted coils.

8. Linear electric motor of claim 1, wherein said source of pulsating electric current comprises a station along said road where electric utility power is converted to power with correct amplitude and wave form of pulsating current, and said converted power is transmitted both by a wire transmission means to a power switch of any powerable electric coil along said road and also by a wire transmission means and a sliding contact means mounted to said vehicle, to a power switch of any powerable electric coil on said vehicle.

9. Linear electric motor of claim 1, wherein, when only one said motor part pair is powered at a time, said spacing arrangement comprises: each of said vehicle parts and each of said road parts are at least substantially of the same length, a motor

part length, and said vehicle has at least 2 vehicle parts, said vehicle parts being spaced apart by a vehicle part spacing of 2 motor part lengths for 2 vehicle parts, said vehicle part spacing being increased by 2 additional motor part lengths for each additional vehicle part in excess of 2, and spacing of said road parts is greater by 2 motor part lengths than spacing of said vehicle parts.

10. Linear electric motor of claim 1, wherein, when only one of said motor part pairs is powered at a time, said spacing arrangement means comprises: each of said vehicle parts and each of said road parts are at least substantially of the same length, a motor part length, and wherein said vehicle has at least 3 vehicle parts, said vehicle parts being spaced apart by a vehicle part spacing of one motor part length for 3 vehicle parts, said vehicle part spacing being increased by 1 additional motor part length for each additional vehicle part in excess of 3, and wherein spacing of said road parts is greater by 1 motor part length than said spacing of said vehicle parts.

11. Linear electric motor of claim 1 wherein, when only one said motor part pair is powered at a time, said spacing arrangement means comprises: each of said vehicle parts and each of said road parts are at least substantially of the same length, a motor part length, and wherein there are at least 4 vehicle parts, and wherein said vehicle parts have a vehicle part spacing which is $1/2$ of a motor part length, and wherein said vehicle part spacing is increased by $1/2$ motor part length for each additional

vehicle part in excess of 4, and wherein said road parts have a spacing which is always $1/2$ motor part length greater than said spacing of said vehicle parts.

12. Linear electric motor of claim 1, wherein, when the number of said motor part pairs that are powered simultaneously is n , where n is a positive integer, the number of said vehicle parts used for powering said motor parts one at a time is increased by a factor of n without changing said spacing of said motor parts used for powering said motor part pairs one at a time.

13. Linear electric motor of claim 1, wherein said source of pulsating electric current provides each said powerable electric coil of each said motor part pair with pulsating current having at least two current nulls, one for switching said pulsating electric current on to any said pair of motor parts when said pair of motor parts is in position to begin a desired forceful interaction between said motor parts of said pair, and another said null for switching said pulsating electric current off to said pair of motor parts when said vehicle has moved the distance over which said forceful interaction can be generated by said pair of motor parts.

14. Linear electric motor of claim 9 wherein said vehicle moves $2\frac{1}{2}$ motor part lengths while said motor part pair generates a desired force on said vehicle.

15. Linear electric motor of claim 10 wherein said vehicle moves 1 motor part length while said motor part pair generates a desired force on said vehicle.

16. Linear electric motor of claim 11 wherein said

vehicle moves 1/2 motor part length while said motor part pair generates a desired force on said vehicle.

17. Linear electric motor of claim 1, wherein said road parts are mounted on a portion of said road located above said vehicle.

18. Linear electric motor of claim 11, wherein said road has a portion of said road below said vehicle, and said vehicle has wheels rolling along said portion of said road below said vehicle.

19. Linear electric motor of claim 11, further comprising a cabin for said vehicle, and tilting means, connected to said cabin, for allowing tilting of said cabin during motion of said vehicle.

20. Linear electric motor of claim 11, wherein said vehicle has wheels compressedly secured to a road all of which is located above said vehicle, further comprising apparatus for the interface of said wheels and said road, said road being supported in a substantially fixed position with respect to the Earth by a support means, said apparatus being apparatus for achieving superior traction between said wheels and said road independently of the weight of said vehicle, and for minimizing oscillation of said wheel upon said road, said apparatus comprising:

said road having at least substantially vertical and concave sides;

a plurality of at least substantially horizontal wheels rotating about at least substantially vertical axles secured to

said vehicle, said wheels having convex rims rolling along said concave sides of said road; and

a compression means, connected to said wheels, for causing said wheels to be compressed against said sides of said road with
5 compression adequate to allow a desired amount of traction to be maintained between said wheels and said road, independently of said weight of said vehicle.

21. Linear electric motor of claim 14, wherein said compression means comprises:

10 said wheels and said axles being configured in pairs on opposite sides of said road; and

an urging means, connected to each said axle of each of said pairs of axles, for urging said axles to move toward one another and toward said road, so as to compress said wheels of said pair
15 of wheels against said opposite sides of said road.

22. Linear electric motor of claim 15, wherein said urging means comprises, for each of said pairs of axles, at least one cable wound in substantial tension around each of said axles, said tension being sufficient to allow said urging means to
20 compress said wheels against said opposite sides of said road, with compression adequate to cause said compression means to allow adequate traction to be maintained between said wheels and said road, independently of said weight of said vehicle.

23. Linear electric motor of claims 2, wherein said
25 source of pulsating electric current is a source of alternating current of fixed frequency, wherein said frequency is high enough

to produce a plurality of current nulls during the time that said source of alternating current remains switched on to any said pair of motor parts.

24. Linear electric motor of claims 3, wherein said source of pulsating electric current is a source of rectified alternating current of fixed frequency, wherein said frequency is high enough to produce at least a plurality of current nulls during the time that said source of rectified alternating current remains switched on to any pair of motor parts and wherein a unidirectional force is generated by any said motor part pair by changing the sign of said rectified alternating current during an appropriate one of said plurality of current nulls.

25. Linear electric motor of claims 3, wherein said source of pulsating electric current is a source of alternating current of variable frequency and wherein the period of said alternating current is equal to the time required for said vehicle to move one motor part length.

26. A linear electric motor for transportation of at least one vehicle along a road, of the type having motor parts which are both vehicle parts of said motor mounted on each said vehicle, and road parts of said motor mounted along said road, comprising:

A pulsating source of electric current, connected to said motor;

A switching means, connected to said motor and to said source of electric current, for switching said current on to those said

motor parts that are powerable electric coils at suitable times and for suitable intervals; and

A spacing and timing control means, for spacing of said motor parts and for controlling timing of said switching of said current to said motor, to perform the functions of allowing continuous transmission of power to said motor for both propulsion and braking of said vehicle, and minimizing the number of road parts required to be present along said road.

27. Linear electric motor of claim 1, further comprising means, connected to said pulsating source of electric current and to said motor parts, for insuring continuous transmission of power to said motor.

28. Linear electric motor of claim 1, wherein said source of pulsating electric current is switched on to power any said powerable electric coil when said powerable electric coil is in position for achieving sufficient magnetic interaction between current flowing in said vehicle part and current in said road part, for generation of a desired electromagnetic force on said vehicle.

29. Linear electric motor of claim 1, wherein said source of pulsating electric current is stationary.

30. Linear electric motor of claim 4, wherein said source of pulsating electric current is a source of alternating current of fixed frequency, wherein said frequency is high enough to produce a plurality of current nulls during the time that said source of alternating current remains switched on to any said pair of motor parts.

31. Linear electric motor of claim 6, wherein said source of pulsating electric current is a source of alternating current of fixed frequency, wherein said frequency is high enough to produce a plurality of current nulls during the time that said source of alternating current remains switched on to any said pair of motor parts.

32. Linear electric motor of claim 7, wherein said source of pulsating electric current is a source of alternating current of fixed frequency, wherein said frequency is high enough to produce a plurality of current nulls during the time that said source of alternating current remains switched on to any said pair of motor parts.

33. Linear electric motor of claim 5, wherein said source of pulsating electric current is a source of rectified alternating current of fixed frequency, wherein said frequency is high enough to produce at least a plurality of current nulls during the time that said source of rectified alternating current remains switched on to any pair of motor parts and wherein a unidirectional force is generated by any said motor part pair by changing the sign of said rectified alternating current during an appropriate one of said plurality of current nulls.

34. Linear electric motor of claim 5, wherein said source of pulsating electric current is a source of alternating current of variable frequency and wherein the period of said alternating current is equal to the time required for said vehicle to move one motor part length.